

THE GENUS AENARIA STÅL , 1876 IN CHINA (HEMIPTERA , PENTATOMIDAE)

FAN Zhong-Hua , LIU Guo-Qing *

Institute of Entomology , Nankai University , Tianjin 300071 , China

Abstract There are five species in *Aenaria* Stål , 1876 so far in the world and four of them distribute in China. A new species of this genus , *Aenaria bivitta* sp. nov. , from Guangxi in China is reported here. The photographs and the genital illustrations of the three examined species are given. A key for discrimination of the known Chinese species is provided.

Key words Heteroptera , Pentatomidae , *Aenaria* , new species , China.

1 Introduction

Stål (1876) erected the genus *Aenaria* based on the type species *Drinostia lewisi* Scott , 1874. Distant (1899) divided *Aenaria* into two sections , one including *A. lewisi* (Scott , 1874) , and the other including *A. assimilans* Distant , 1883 and *A. elongata* (Dallas , 1851) . However , the latter two species of the second section have been separately transferred to genus *Lagynotomus* Breddin , 1906 and *Niphe* Stål , 1867. After that , two other Chinese species , *A. pincii* Yang , 1934 and *A. zhangi* Chen , 1989 , were described. Hsiao (1977) reviewed this genus for two species *A. lewisi* and *A. pincii* in China. Breddin (1904) erected a new genus *Euaenaria* with the new species *Euaenaria jucunda* as the type species. But in 1906 , he synonymized it as a true *Aenaria* species after comparing with the type species.

However , the above studies contain no anatomical details of both the male and female genitalia. This paper tries to study the genus *Aenaria* from China and four species are treated , with one described as new to science. The digital habitus figures , illustrations of male and female genitalia which bears important systematic characters are provided. An examination of the spermatheca of *A. pincii* females demonstrate a wide individual variability in the structure of the spermathecal bulb and number of the finger-like processes. Thus the structure of the female spermatheca revealed no specific diagnostic characters in *Aenaria*. A key for identification for Chinese *Aenaria* species and the distributional information are also given.

2 Materials and Methods

For the dissection of genitalia , the male aedeagus and female abdomen were taken out from the relaxed specimen , then kept in 2 % warm KOH solution which is near an incandescent lamp for 8-10 hours. The inflation

of aedeagus sometimes needs mechanical manipulation and pressure on different parts of theca and conjunctiva. After examination , the female spermatheca and the male pygophore were kept in genitalia vials with glycerin. The other parts of female abdomen were glued on a paper board which is pinned with the corresponding specimen.

All measurements are in millimeters. The body width is taken as the width across the most width of pronotum and the body length is from the apex of the head to the tips of membrane of the hemelytra ; the head width is taken between the eyes and the head length is from the tip of head to the midpoint of the anterior margin of the pronotum.

The type specimen is deposited in the Institute of Entomology , Nankai University , Tianjin , China.

3 Taxonomy

Aenaria Stål , 1876

Aenaria Stål , 1876: 55 ; Distant , 1899: 432 ; Distant , 1902: 141 ; Hsiao et al. , 1977: 101 , 147-148.

Euaenaria Breddin , 1904: 2-3 ; Breddin , 1906: 256-257.

Type species. *Aenaria lewisi* (Scott , 1874).

Body elongate and ovate ; pale luteous ; endocorium darker in color , while the anterolateral margins of pronotum and the whole exocorium much paler ; head large with its lateral margins moderately sinuate , mandibular plate longer than the clypeus and meeting beyond it ; first segment of antenna not reaching apex of head ; pronotum broader than long , lateral margins oblique and explanate , lateral angles subprominent ; scutellum long , but not reaching apex of corium ; apical angle of corium acute ; rostrum about reaching or slightly beyond the mesocoxae ; peritreme elongate with round apex , bend upwards in the middle , passing a little beyond half of the evaporatoria.

Male genitalia. Dorsal rim of pygophore concave ; dorsolateral processes well developed ; ventral rim of

This work was supported by the National Natural Science Foundation (30870328 , J0630963) and The Research Fund for the Doctoral Program of Higher Education (20060055013) of China.

* Corresponding author , E-mail :Liugq @nankai.edu.cn

Received 23 Feb. 2009 , accepted 21 July 2009.

pygophore concave, with two distinctly separated processes bearing acute tips or with two processes sharing one common base in the middle of the rim, while no such processes in *Aenaria lewisi*; lateral rims usually truncate in the end; transverse ridge well developed, greatly concave in the middle, extending much beyond the ventral rim, two lateral protrudent sides lobe-like with acute tips while lost in *A. lewisi*; paramere simple, with or without sensory lobe; aedeagus with one pair of sclerotized basolateral conjunctiva lobes and one pair of ventral conjunctival lobes which are totally membranous in *A. lewisi* but with sclerotized apexes in three other species; vesica not passing beyond the apex of the median penial plate.

Table 1. Measurements of *Aenaria* species.

Species and sex	Range	Body length	Head length	Pronotum length	Head width	Pronotum width	Interocular distance
<i>A. bivitta</i> sp. nov.							
Male		12.00	2.50	3.10	3.70	7.40	1.50
<i>A. lewisi</i> Male	Minimum	9.70	2.58	2.50	3.05	6.21	1.27
	Maximum	10.30	2.80	2.98	3.30	7.10	1.40
Female		11.5	2.95	2.90	3.40	6.75	1.30
<i>A. pinchii</i>							
Male	Minimum	11.10	2.60	2.80	3.15	7.03	1.50
	Maximum	12.70	2.95	3.45	3.72	7.85	1.62
Female	Minimum	10.50	2.50	2.78	3.31	6.58	1.42
	Maximum	14.00	3.05	3.65	3.90	8.30	1.60
<i>A. zhangi</i>							
Male	Minimum	11.00	2.65	3.00	3.50	7.15	1.40
	Maximum	12.10	2.70	3.19	3.60	7.61	1.60
Female	Minimum	12.50	2.80	3.32	3.70	7.90	1.52
	Maximum	12.70	2.70	3.30	3.80	8.05	1.60

5 *Aenaria bivitta* sp. nov. (Figs. 1-2, 9-13)

Diagnosis. The colour pattern and the shape of anterolateral margin of pronotum resemble *A. lewisi*, but *A. lewisi* has a longitudinal series of black punctures in the middle of abdomen beneath while the new species doesn't. The male genitalia is also very different from the known species in this genus. *A. jucunda*, which the authors haven't seen yet, has the lateral sides of venter transparently punctured according to the original description by Breddin, but the new species has black punctures on the lateral sides of venter, and can be identified.

Description. Male elongate-ovate; pale luteous; blackly punctured above except anterolateral margin of pronotum and exocorium; body beneath colorless punctured.

Head. Large, triangular; blackly punctured except a small smooth area near eye, in which there is only a row of black punctures; its lateral margins moderately sinuate and narrowed gradually forwards, mandibular plate longer than clypeus, meeting beyond it; ocelli reddish; an interrupted black streak near each antennal

Female genitalia. 9th paratergite elongate and 8th paratergite triangular; spermathecal bulb with finger-like processes the number of which varies in the species.

4 Key to the Chinese species of *Aenaria*

- Scutellum with a small black spot near each lateral margin of apex, anterolateral margin of pronotum straight *A. zhangi*
- Scutellum with no black spot near lateral margin of apex 2
- Ventral side of both thorax and abdomen lightly yellow, transparently punctured, stigma black, anterolateral margin of pronotum convexly sinuated, luteous margin much broader *A. pinchii*
- Ventral side of both thorax and abdomen with many black punctures 3
- With one longitudinal series of black spots in the middle of abdomen beneath *A. lewisi*
- Without longitudinal series of black spots in the middle of abdomen beneath where only transparently punctured *A. bivitta* sp. nov.

base with length almost equal to diameter of eye; antenna 5-segmented, brown ochraceous with the 5th much darker, first segment of antenna not reaching apex of head, lengths of segments: = 5.8
13.0 10.8 13.0 22.0; rostrum reaching the mesocoxae.

Thorax. Pronotum broader than long, blackly punctured; anterolateral margins simple and substright, of which luteous areas without punctures narrow; a small, black, nod-like spot near each lateral angle. Scutellum elongate, pale luteous with black punctures, begin to narrow a little beyond the middle; a small smooth space without punctures on each basal angle; round and sparingly punctured at apex. Clavus and endocorium ochochraceous and blackly punctured, a distinct long black streak along the medial fature; exocorium pale stramineous sharing the same colour with the anterolateral margins of pronotum; anterior margins of hemelytra slightly convex; membrane brown and distinctly beyond the apex of abdomen. Lateral sterna with an interrupted streak of black punctures. Ostiolar peritreme moderately long, bent forwards from the middle with the apex round. Legs pale ochraceous with the end of tarsi black.



Figs. 1-8. Habitus photographs of *Aenaria* species. 1. *A. bivitta* sp. nov. (male, dorsal view). 2. *A. bivitta* sp. nov. (male, ventral view). 3. *A. lewisi* (male, dorsal view). 4. *A. lewisi* (male, ventral view). 5. *A. pinchii* (male, dorsal view). 6. *A. pinchii* (male, ventral view). 7. *A. zhangi* (male, dorsal view). 8. *A. zhangi* (male, ventral view).

Abdomen. Venter with a slightly prominent tubercle at base; a series of black punctures forming a roughly longitudinal interrupted streak near stigmata which is black and this streak is connected with the streak on the sterna of thorax. Connexiva concolorous, stramineous and slightly exposed at rest, laterotergite armed with small but prominent black spine.

Male genitalia. Dorsal rim a little concave, dorsolateral processes developed well, lobe-like with round apex and slim stem; ventral rim with two distinctly separated processes bearing black acute tips, the transverse ridge two layers, outer layer with a small black acute process pointed outwards on each lateral wide lobe which is sharply protrudent from the middle, while inner layer much lower with two little black processes in middle; paramere F-shaped with sensory lobe finger-like; aedeagus with one pair of sclerotized basolateral

conjunctival lobes and one pair of ventral conjunctival lobes the ends of which sickle-like and strongly sclerotized; median penal lobes sclerotized with the apex round, smooth and longer than end of vesica.

Holotype, Mt. Mao'er (25°53' N, 110°25' E; alt. 1 000-1 200 m), Guangxi, China. 23 Aug. 1992, ZHENG Le-Yi leg.

Host plant. Bamboo.

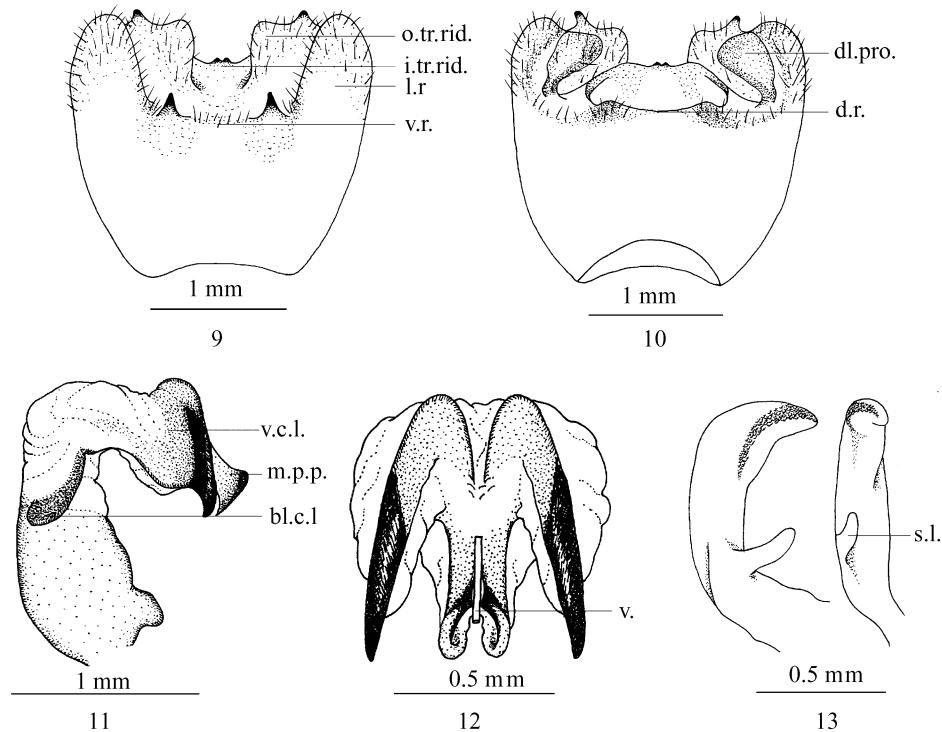
Distribution. China (Guangxi).

Etymology. Named for the two strips of black punctures on the venter.

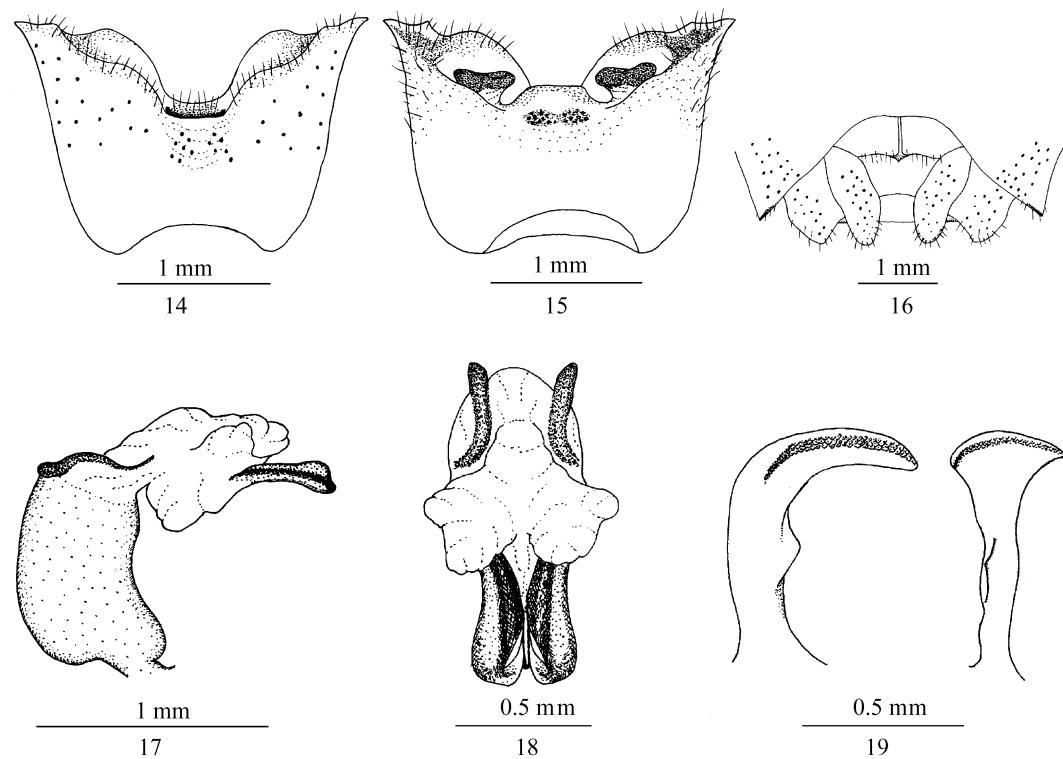
6 *Aenaria lewisi* (Scott, 1874) (Figs. 3-4, 14-19)
Drinostia lewisi Scott, 1874: 296.

Aenaria lewisi: Stål, 1976: 55; Hsiao et al., 1977: 147-148.

This species has several unique characters including the three streaks of black punctures on the venter; both the ventral rim and the transverse ridge of pygophore



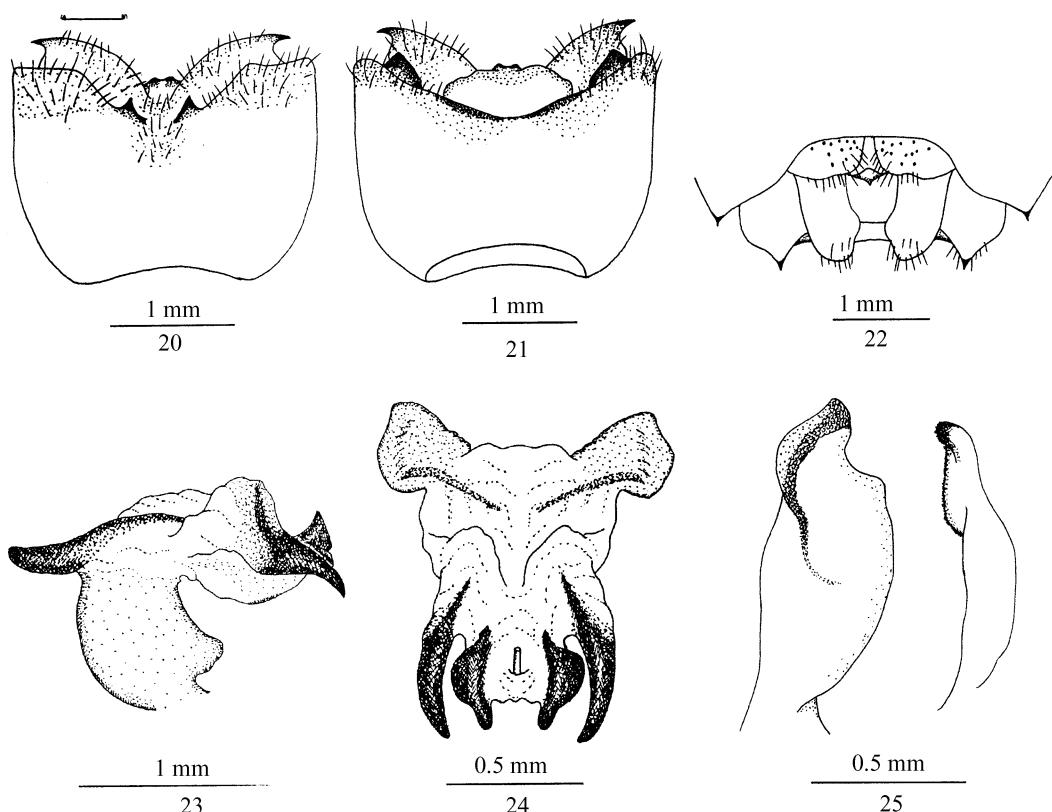
Figs. 9-13. *Aenaria bivitta* sp. nov. 9. Pygophore, ventral view. 10. Pygophore, dorsal view. 11. Aedeagus, lateral view. 12. Aedeagus, apical view. 13. Parameres in different views. (bl.c.l. = basolateral conjunctival lobe. d.r. = dorsal rim. dl.pro. = dorsolateral process. i.tr.rid. = inner transverse ridge. l.r. = lateral rim; m.p.p. = median penial plate. o.tr.rid. = outer transverse ridge. s.l. = sensory lobe. v. = vesica. v.c.l = ventral conjunctival lobe. v.r. = ventral rim)



Figs. 14-19. *Aenaria lewisi* (Scott). 14. Pygophore, ventral view. 15. Pygophore, dorsal view. 16. Terminal end of female abdomen, ventral view. 17. Aedeagus, lateral view. 18. Aedeagus, apical view. 19. Parameres in different views.

bearing no black acute tips; the ventral conjunctival lobes of aedeagus absolutely membranous without the sclerotized apex and each ventral conjunctival lobe further two-lobed; sensory lobe of paramere much stout and obtusely triangular; 8th paratergite of female with the apex bearing no acute tip.

Specimens examined. Jiangxi, 3 ♂, 1 ♀, Mt.



Figs. 20-25. *Aenaria pinchii* Yang. 20. Pygophore, ventral view. 21. Pygophore, dorsal view. 22. Terminal end of female abdomen, ventral view. 23. Aedeagus, lateral view. 24. Aedeagus, apical view. 25. Parameres in different views.

7 *Aenaria pinchii* Yang, 1934 (Figs. 5-6, 20-25)

Aenaria pinchii Yang, 1934: 104-107; Hsiao et al., 1977: 147.

The anterolateral margin of pronotum slightly convexly sinuated, luteous margin much broader than other species; aedeagus with the basolateral conjunctival lobes long and finger-like; the sclerotized apexes of ventral conjunctival lobes not stronger than *A. zhangi* and *A. bivitta* sp. nov.; paramere as shown in Fig. 25.

Specimens examined. Jiangxi, 2 ♂, 1 ♀, Mt. Lu, 13 Sep. 1965, WANG Liang-Chen leg.; 1 ♂, Mt. Lu, 14 Sep. 1965. Chongqing, 1 ♂, 3 ♀, Mt. Jinfo, Nanchuan, alt. 1250 m, ? Sep. 2000, LI Chuan-Ren leg.; 1 ♂, 2 ♀, Mt. Jinfo, Nanchuan, alt. 1300-1500 m, 31 Aug. 2000, LI Chuan-Ren leg.; 3 ♂, Mt. Jinfo, Nanchuan, alt. 1200 m, 1 Sep. 2000, LI Chuan-Ren leg.; 1 ♂, Mt. Jinfo, Nanchuan, alt. 1200-1300 m, 4 Sep. 2000, LI Chuan-Ren leg. Zhejiang, 1 ♂, 1 ♀, Botanical Garden of Mount. Qingliang, alt. 900 m, 13 Aug. 2007, FAN Zhong-Hua leg.; 1 ♂, 1 ♀, Botanical Garden of Mount.

Lu, 10 Sep. 1965, LIU S-L leg. Zhejiang, 1 ♂, China, Mt. Qingliang, alt. 620-650 m, 10 Aug. 2005, KE Yun-Ling leg.

Distribution. Fujian, Gansu, Guangxi, Hainan, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang; India, Korea, Japan.

Qingliang, alt. 900 m, 13 Aug. 2007, ZHU Geng-Ping leg.; 1 ♂, Mt. Qingliang, alt. 900 m, 9 Aug. 2005, KE Yun-Ling leg.; 1 ♂, Mt. Wuyan, alt. 900 m, 30 July 2005, WANG Yi-Ping leg. Guizhou, 1 ♂, Huguo Temple, Mt. Fanjing, alt. 1200 m, 2 Aug. 2001, BU Wen-Jun leg.; 1 ♂, Huguo Temple, Mt. Fanjing, alt. 1200 m, 4 Aug. 2001, ZHU Wei-Bing leg. Hunan, 2 ♂, Cili, 16 Oct. 1985, ZOU Huan-Guang leg.

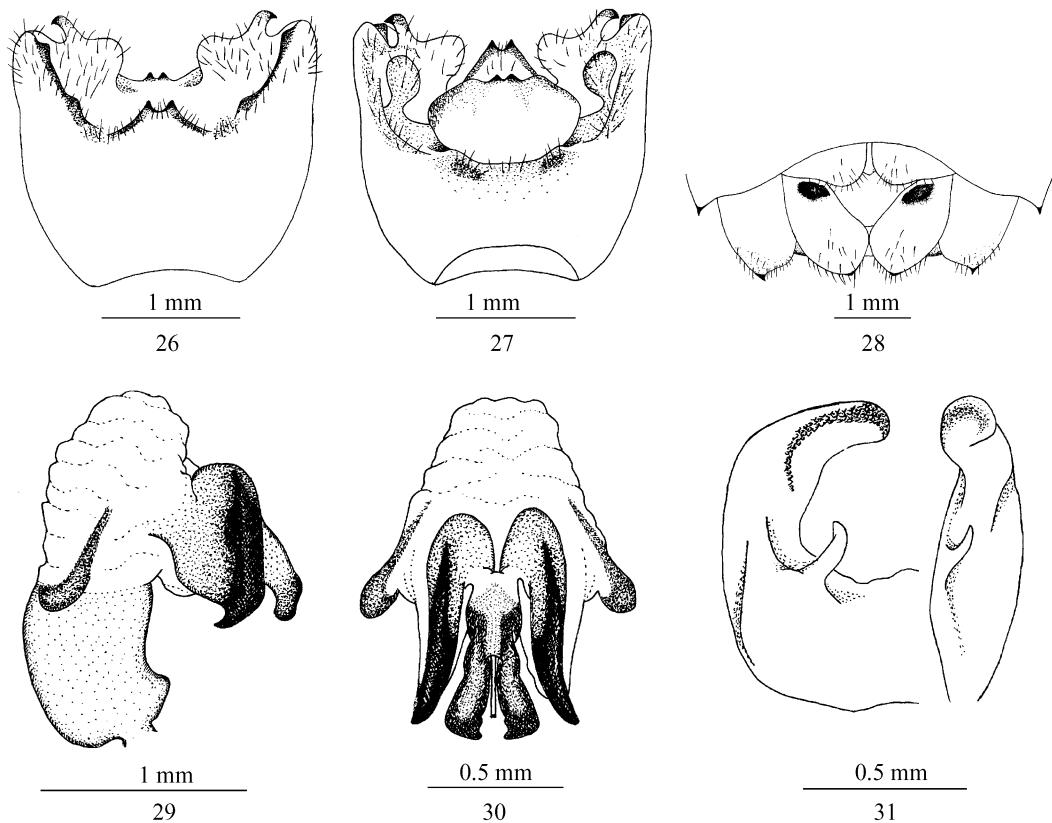
Distribution. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Zhejiang.

8 *Aenaria zhangi* Chen, 1989 (Figs. 7, 8, 26-31)

Aenaria zhangi Chen, 1989: 478-479.

The scutellum with a small black spot near each lateral margin of apex; the two median processes of the ventral rim sharing one common base; the lateral margin of ventral rim sinuate and distinctly black; paramere with sensory lobe slim finger-like.

Specimens examined. Hunan, 2 ♂, Mt. Mang, City Chenzhou, alt. 1100-1270 m, 22 July 2004, LI



Figs. 26-31. *Aenaria zhangi* Chen. 26. Pygophore, ventral view. 27. Pygophore, dorsal view. 28. Terminal end of female abdomen, ventral view. 29. Aedeagus, lateral view. 30. Aedeagus, apical view. 31. Parameres in different views.

Jun-Lan leg.; 1 ♂, 1 ♀, Mt. Mang, City Chenzhou, alt. 1100-1270 m, 22 July 2004, HUA Ji-Meng leg.; 4 ♂♂, Mt. Mang, City Chenzhou, alt. 1100-1270 m, 23 July 2004, ZHU Wei-Bing leg. Fujian, 1 ♂, Mt. Wuyi, 28 Apr. 1993, BU leg.

Distribution. Guangdong, Hunan, Zhejiang, Fujian.

Acknowledgments We thank Prof. David A. Rider for offering references.

REFERENCES

- Breddin, G. 1904. Beschreibungen neuer indo-australischer Pentatomiden. Wiener Entomologische Zeitung, 23 (1): 1-19.
Breddin, G. 1906. Rhynchotographische Beiträge. Drittes St. ük. Wiener Entomologische Zeitung, 25 (8-9): 245-246.

中国伊蝽属记述（半翅目，蝽科）

范中华 刘国卿*

南开大学昆虫学研究所 天津 300071

摘要 伊蝽属全世界已知5种, 目前, 中国已知有4种, 即双带伊蝽 *Aenaria bivitta* sp. nov., 伊蝽 *A. lewisi* (Scott), 宽缘伊蝽 *Aenaria pinchii* Yang 和直缘伊蝽 *Aenaria zhangi* Chen。

双带伊蝽, 新种 *Aenaria bivitta* sp. nov. (图1, 2, 9~13)

新种与该属模式种伊蝽 *A. lewisi* (Scott, 1874) 相似, 主要特征 半翅目, 蝽科, 伊蝽属, 新种, 中国。

中图分类号 969.351.6

Chen, Z-Y 1989. Two new species of Pentatominae from Guangdong, China (Hemiptera: Pentatomidae). *Acta Entomologica Sinica*, 32 (4): 477-479.

Distant, W. L. 1883. First report on the Rhynchota collected in Japan by Mr. George Lewis. *Transactions of the Entomological Society of London*, (4): 421-422.

Gaedike, H. 1971. Katalog der in den Sammlungen des chemaligen Deutschen Entomologischen Institutes aufbewahrten Typen. -V. *Beiträge zur Entomologie*, 21 (1-2): 79-159.

Hsiao, T-Y, Zheng, L-Y et al. 1977. A handbook for the determination of the Chinese Hemiptera-Heteroptera. Vol. 1. Science Press, Tianjin. 147-148.

Rider, D. A., Zheng, L-Y and Kerzhner, I. M. 2002. Checklist and nomenclatural notes on the Chinese Pentatomidae (Heteroptera). II. Pentatominae. *Zoosystematica Rossica*, 11 (1): 135-153.

Scott, J. 1874. On a collection of Hemiptera Heteroptera from Japan. Descriptions of various new genera and species. *Annals & Magazine of Natural History*, (4) 14 (82): 289-304.

Yang, W-I 1934. Pentatomidae of Kiangsi, China. *Bulletin of the Fan Memorial Institute of Biology, Zoology*, 5 (2): 104-107.

要区别如下: 新种双带伊蝽腹下中央刻点无色, 生殖囊腹缘具两个末端尖锐的黑色突起, 阳基侧突感觉叶为细长的指状; 而伊蝽腹下中央有一条黑色刻点组成的纵条带, 生殖囊腹缘不具任何突起, 阳基侧突感觉叶为宽钝的三角形。

正模, 广西猫儿山; 海拔1000-1200 m, 23 Aug. 1992, 郑乐怡采。模式标本保存在南开大学昆虫学研究所。

*通讯作者。